

CLAIMS

1. Coupled-power adjusting apparatus in optoelectronic modules comprising:

a receptacle assembly including an elongated optical fiber receiving opening with a longitudinal axis and an optoelectronic device; and

variable optical power coupling apparatus mounted in the optical fiber receiving opening of the receptacle assembly and rotateable about the longitudinal axis without moving along the optical axis, relative rotation of the variable optical power coupling apparatus varying the amount of optical power launch between the optoelectronic device and an optical fiber positioned in the optical fiber receiving opening.

2. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 1 wherein the variable optical power coupling apparatus includes a polarized isolator.

3. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 2 wherein the polarized isolator is positioned in the optical fiber receiving opening of the

receptacle assembly so as to be in abutting engagement with an optical fiber positioned in the optical fiber receiving opening.

4. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 2 wherein the optoelectronic device includes a laser mounted to emit light along the longitudinal axis.

5. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 4 wherein the polarized isolator is polarized in a θ_z direction, where the longitudinal axis is a Z-axis, so that relative rotation changes the polarization of the isolator relative to light emitted by the laser and coupled-power is at a maximum at approximately $\theta_z = 0^\circ, 180^\circ$ and 360° and coupled-power is at a minimum at approximately $\theta_z = 90^\circ$ and 270° .

6. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 1 wherein the variable optical power coupling apparatus includes a beveled end of an optical fiber defining a numerical aperture (NA).

7. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 6 wherein the beveled end of the optical fiber is formed so that the numerical aperture defines an optical cone external to the optical fiber having a half-angle θ , wherein θ is related to the numerical aperture of the optical fiber through an equation given as $NA = \sin(\theta)$.

8. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 7 wherein the half-angle θ of the optical cone defined by the beveled end of the optical fiber is formed to provide maximum coupled optical power at a rotation θ_z equal to one of 0° and 360° and to provide minimum coupled optical power at a rotation θ_z equal to 180° .

9. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 6 wherein the beveled end of the optical fiber is formed on an optical fiber stub permanently mounted in the optical fiber receiving opening of the receptacle assembly.

10. Coupled-power adjusting apparatus in optoelectronic modules comprising:

a receptacle assembly including an elongated optical fiber receiving opening and a laser mounted to emit light along an optical axis extending axially through the elongated optical fiber receiving opening; and

variable optical power coupling apparatus including a polarized isolator mounted in the optical fiber receiving opening of the receptacle assembly and rotateable about the optical axis without moving along the optical axis, relative rotation of the polarized isolator varying the amount of optical power coupled between the laser and an optical fiber positioned in the optical fiber receiving opening, and the polarized isolator being further positioned in the optical fiber receiving opening of the receptacle assembly so that an end of an optical fiber positioned in the optical fiber receiving opening butts against a surface of the polarized isolator.

11. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 10 wherein the polarized isolator is polarized in a θ_z direction, where the optical axis is a Z-

axis, so that relative rotation changes the polarization of the isolator relative to light emitted by the laser and coupled-power is at a maximum at one of $\theta_z = 0^\circ, 180^\circ$ and 360° and coupled-power is at a minimum at one of $\theta_z = 90^\circ$ and 270° .

12. Coupled-power adjusting apparatus in optoelectronic modules comprising:

a receptacle assembly including an elongated optical fiber receiving opening and a laser mounted to emit light along an optical axis; and

variable optical power coupling apparatus including an elongated optical fiber stub having a longitudinal axis and with a beveled end beveled at an angle to the longitudinal axis defining a numerical aperture through which the fiber stub receives light from the laser, the optical fiber stub being mounted in the optical fiber receiving opening of the receptacle assembly with the longitudinal axis at an angle with the optical axis, the optical fiber stub being rotateable about the longitudinal axis without moving along the longitudinal axis, relative rotation of the optical fiber stub varying the amount of optical power coupled between the laser and the optical fiber stub.

13. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 12 wherein the beveled end of the optical fiber is formed so that the numerical aperture defines an optical cone external to the optical fiber having a half-

angle θ , wherein θ is related to the numerical aperture of the optical fiber through an equation given as $NA = \sin(\theta)$.

14. Coupled-power adjusting apparatus in optoelectronic modules as claimed in claim 13 wherein the half-angle θ of the optical cone defined by the beveled end of the optical fiber is formed to provide maximum coupled optical power at a rotation θ_z equal to one of 0° and 360° and to provide minimum coupled optical power at a rotation θ_z equal to 180° .